

Case of Fatal Hemorrhage from Perforation of the Aorta by False Teeth impacted in the Œsophagus. By JAMES DUNCAN, M.D., Fellow of the Royal College of Surgeons, L. and E., one of the Surgeons to the Royal Infirmary, Edinburgh.

— CALDER, æt. 22, Edinburgh, March 9, 1844, had lost his two superior anterior incisors when a boy by an injury received when playing at ball. Being a dentist's workman, he had, to conceal the loss, made at his spare hours artificial substitutes which he had worn for the last three months. These were intended to be removed at night, and in consequence of this, as well as to prevent them from being seen, he had made the gold plates, by means of which they were attached to the adjoining teeth, as little projecting as possible, compatible with the retaining them in position. The consequence was, that their grasp of the adjacent teeth was but slight, and they could be displaced with ease. His master had repeatedly warned him of the danger attending the wearing them during sleep, and recommended him always to remove them. He had, however, neglected this precaution, and on the 28th February last, he had gone to rest with them as usual. In the morning the teeth were amissing; and after a fruitless search for them amongst the bed-clothes, he became convinced that he must have swallowed them. He was further confirmed in this opinion by the difficulty in swallowing which he experienced, and by the sharp pain which he suffered when the attempt was made. He was naturally much alarmed by the accident, and in consequence applied to Mr Syme for assistance. Mr S. passed a probang, and detected a foreign body in the œsophagus, considerably below the cricoid cartilage, and much beyond the reach of the ordinary forceps used for extracting foreign bodies from the gullet.

Mr S. now recommended his removal to the hospital, and when there introduced a probang with threads passed through the bulb, the other ends being retained in the hand, trusting that if the bulb could be carried beyond the foreign body, it might be entangled by them, and thus removed. Nothing, however, was detected, and it was believed that it had found its way into the stomach,—an opinion which was rendered the more probable by the fact, that the difficult deglutition was by no means so great as previously. So considerable indeed was the relief, that the young man requested permission to leave the hospital the same

evening. It was thought unsafe to comply with this request, and he remained in hospital nine days, still suffering from the fixed pain already alluded to, and occasionally spitting small quantities of blood, but without complaining of much difficulty in deglutition. The pain was consequently regarded as merely the effect of some injury inflicted by the foreign body during its passage downwards, and it was thought unadvisable to make any farther examination during that period. From some cause or other he left the hospital on the evening of the ninth day, and returned to his own home.

Next morning, the 9th of March, I received a hurried call from his mother, who had been much alarmed by an occurrence which had taken place shortly before I had been sent for. She stated that her son had risen from bed, and that in crossing the room towards the window, he had become suddenly faint and giddy, and had vomited a mouthful of blood. He was immediately removed to bed, and complained of a feeling of great weakness. I called upon him as soon as possible, and found that during the absence of his mother he had slept a little, but still complained of great debility, and of some slight difficulty in breathing. His face was pale, and the skin rather cold, but the pulse was of moderately good strength. From his description of what had taken place, I was led to believe that the foreign body had been dislodged from its situation, and that it was possibly within reach of the forceps, with which I had provided myself. I accordingly requested him to sit up by the side of his bed, to enable me to make the necessary examination. This he did with ease, and without much assistance, expressing great anxiety to have something done to relieve him. The act of depressing the tongue, to enable me to introduce the forceps, produced vomiting, and a mouthful of dark fetid blood was discharged. This was immediately followed by another but much larger quantity of fluid of the same description, perhaps about eight or ten ounces, and the false teeth were heard to rattle against the vessel into which it was received. The patient was immediately aware of this, and his friends were overjoyed at what had taken place. Another mouthful of the same fluid was then ejected; an interval of a few seconds elapsed, and then a mouthful of bright arterial blood was discharged; a second, and a third followed, the lips became livid, the pulse at the wrist ceased, the patient gave one or two convulsive sobs, and expired.

An inspection of the body was readily obtained from the

friends. It was evident from what had taken place, that some artery of large size had been perforated, but it was of course impossible to say, previously to the dissection, what vessel had been injured. The following were the appearances met with at the post-mortem examination :—The pharynx, the œsophagus, and stomach, along with the carotids, subclavians, and arch of the aorta, were removed entire, a ligature having been previously thrown around the duodenum to prevent the escape of the blood which had accumulated in the stomach, and so enable us to form an estimate of the quantity which had been lost. The œsophagus, stomach, and duodenum were found distended with pretty bright arterial blood. The quantity could not be measured; but in the opinion of those present at the examination, Professor Henderson, Mr Shand, Mr Reid, and myself, there could not be less than eight or ten pounds. The pharynx and œsophagus were laid open by an incision posteriorly, carried as low as the cardiac orifice of the stomach. About $4\frac{1}{2}$ inches from the rima glottidis there was an ulcerated perforation of the anterior part of the œsophagus, of about $\frac{3}{4}$ ths of an inch in length and three lines in breadth, passing obliquely upwards from the right to the left side. The edges of the perforation were rounded, and there was considerable surrounding injection of the mucous membrane. By this opening the probe could be readily passed into the aorta; but the latter vessel was not laid open at the time, it being thought better to immerse it for a day or two in spirits before doing so. On laying open the aorta subsequently, a perforation of about the size of a large crowquill was found about half an inch below the origin of the left subclavian artery. The opening was irregular in form, the edges everted, and at the lower part there was a pretty firm adherent coagulum. There was little or no vascular injection around this opening. The artery was otherwise perfectly healthy.

I have annexed a sketch of the false teeth, along with another showing the point at which the aorta was wounded. The gold plate to which the teeth were attached was pretty large, adapted to the shape of the palate immediately behind the incisor canine and bicuspid teeth on either side, with projections corresponding to the spaces between these teeth. The two last of these projections on both sides were large and pointed, with almost a cutting edge. The space between the two terminal projections measured one inch and $\frac{5}{8}$ ths, and the breadth of the plate behind the incisors measured fully $\frac{3}{8}$ ths of an inch. One could scarcely

conceive a more dangerous weapon, or one more likely to be followed by fatal consequences, than that I have just described, when lodged in the situation in which this one must have remained from the time of the accident, in order to have produced the extent of ulceration met with on dissection. Its form readily explains how it could not be felt, on the second introduction of the probang, and offered no resistance to the passage of the instrument downwards. From the curve which it describes, and from the stretching of the œsophagus between its two terminal points, ample space must have been left for the passing of the instrument; and from the manner in which it must have got impacted after the first passing of the probang, it would present superiorly an edge not much exceeding in thickness that of an ordinary sheet of writing-paper, so that the bulb would readily glide over it without any resistance being met with.

In every point of view the case was an exceedingly alarming one. If the teeth were allowed to remain in the œsophagus, they could scarcely fail to induce fatal consequences; and if they passed into the stomach, the result would in all probability have been the same, although very dangerous bodies are recorded as having passed the whole length of the intestinal canal without injury. Even had they been within reach of the forceps and grasped by them, or had they been entangled by the threads attached to the probang, their removal must have been attended with very great danger, and might have proved instantaneously fatal from the laceration of the important parts in the vicinity. This case also affords an instructive example of one of the many modes in which foreign bodies lodged in the œsophagus may prove fatal, and inculcates the necessity of removing them as early as possible when their removal can be effected.

Foreign bodies lodged in the œsophagus may lead to fatal consequences in a variety of ways. When large, the first danger to be dreaded is that of suffocation: this may take place instantaneously before assistance can be afforded, and many cases are recorded in which death has been produced in this manner. Should the foreign body not be so large as to induce asphyxia, but remain impacted in the œsophagus, various other results may follow. Inflammation of the surrounding parts, leading to suppuration, may supervene, and the foreign body thus being set free, may either descend into the stomach, or may be rejected by the mouth along with the purulent matter. Extensive suppuration of the surrounding soft parts may on the other hand take place, and may, as has

not unfrequently occurred, lead to fatal consequences. Numerous cases of this description are recorded, amongst others one by Hofer, in which an abscess formed, and gave way into the chest, death being the consequence.

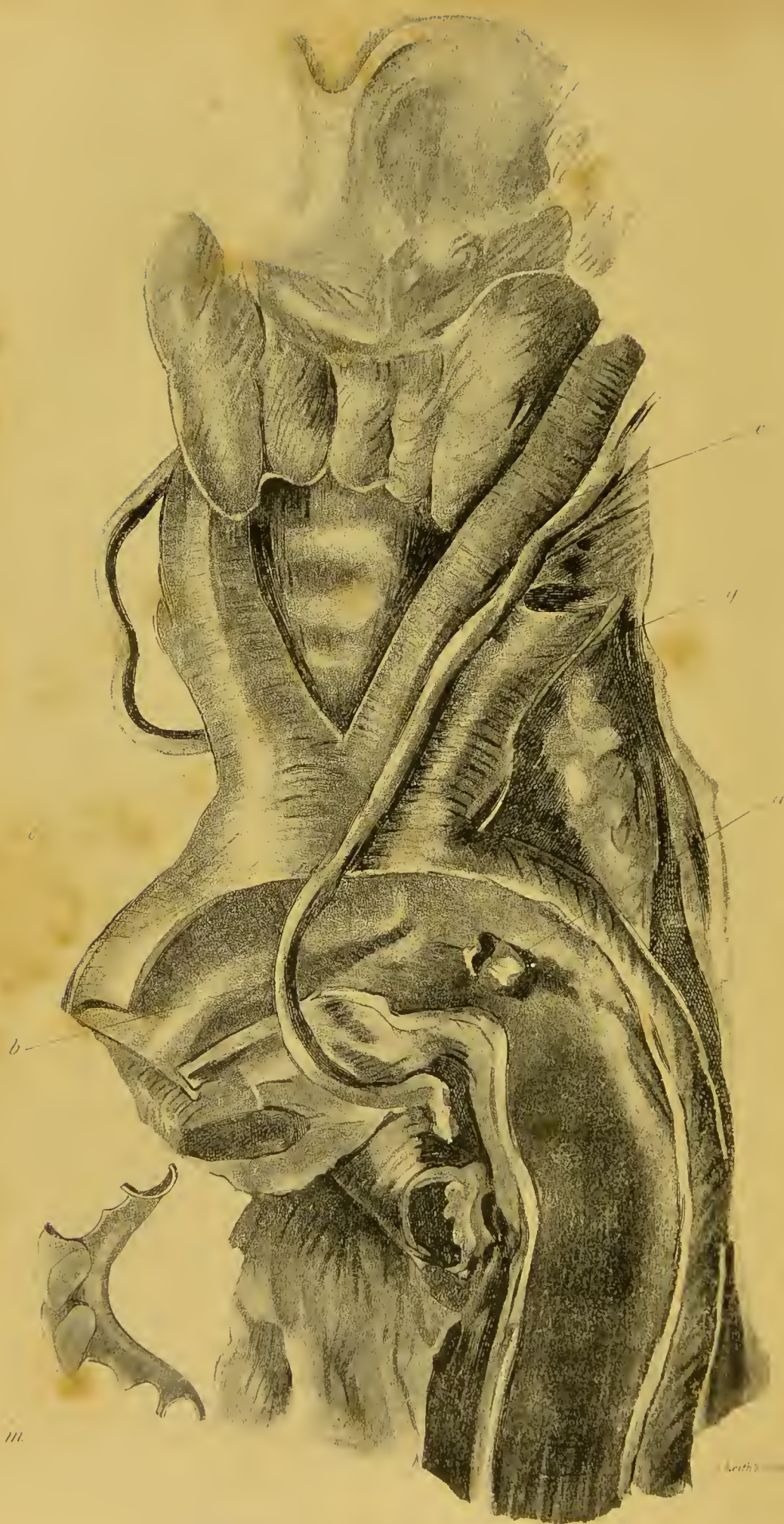
Sir G. Ballingall has kindly communicated to me the case of a soldier under his care in India, in which death followed pretty extensive gangrene of the surrounding parts. The man, on one of the anniversaries of the king's birthday, when in a state of intoxication, was eating his curry hurriedly, and in doing so swallowed a portion of bone. The probang was passed, but nothing could be detected. He remained in the hospital for ten days, and then left it, but returned some time afterwards and died. On dissection, the bone was found impacted in the gullet, and the surrounding soft parts were in a state of gangrene.

In some few cases, the foreign body, after inducing suppuration of the soft parts in the neck, has escaped externally on the spontaneous giving way of the abscess, or has been removed by incision. One or two are recorded, in which the trachea has been perforated by ulceration, and in this manner also the accident may lead to a fatal result. In some few instances the foreign body has formed a pouch for itself, and has remained there for years, and afterwards been ejected by vomiting. One or two cases are related in which the foreign body had been expelled after the lapse of fourteen or sixteen years.

Death by hemorrhage, as in the case I have related, is not so rare as I was led to believe, before consulting the literature of the subject. Many cases in which this has occurred are met with in different works, the hemorrhage having followed perforation by ulceration of the different large vessels in the vicinity at periods more or less distant from the date of the accident. In the *Dictionnaire de Medecine*, 1840, three cases are referred to as having terminated in a similar manner to the one I have related; one by Martin, in the case of a soldier who had been in the habit of swallowing pieces of money for wagers: these he generally passed by stool, but at last he suffered from his folly. Fifteen days after one of his exploits, he perished from vomiting of blood; and on examination, the coin, which had not been passed, was found to have penetrated the aorta, nearly at the same point as in the case I have recorded.—The two other cases, the particulars of which I have not been able to obtain, are related by Wagret, and Saucerotte.—The carotid has been wounded in several instances. One is referred to in

the same work as recorded by Dimoustier: I append another as related by M. Begin, Surgeon Major at the Val-de-Grace. "A soldier, while eating his soup, swallowed a piece of bone, which stuck in the œsophagus. Attempts to push it on towards the stomach were made, and seemed to be successful. Soft and liquid food could now be taken without difficulty, and a probang, upon being introduced, readily reached the stomach. The patient seemed to labour under no further inconvenience. He left the hospital, but in the course of a month he returned again, complaining of a sharp pain in the left side of the neck. By the employment of antiphlogistics his ailment was removed, and he left the hospital once more. The pain, however, which never entirely left him, except for short intervals, became again severe; the patient returned for the third time to the hospital, not, indeed, for the particular accident in question, but for a gonorrhœa which he had contracted. Every thing seemed to be going on well, when he suddenly threw up large quantities of blood, perhaps to the amount of seven pounds. The hemorrhage presently ceased, but the next day it returned, and proved fatal. On examining the body, there were found in the œsophagus, about its upper third part, two parallel ulcerations; that on the right side nine lines in breadth, and that on the left twelve. Opposite the latter there was an adhesion between the œsophagus and the corresponding part of the carotid. In this vessel, moreover, erosion had produced a small opening, about a line in diameter, which proved to be the source of the hemorrhage."

Guthrie relates a case, in his work on the arteries, in which both carotids were wounded from swallowing pins, a soldier having done so in order to get his drill-sergeant into a scrape. Another is related by Mr Bell of Barrhead, in the Medical Gazette, February 10, 1843, in which the right carotid was perforated by a needle, which had been accidentally swallowed. The pulmonary artery has been wounded, in one case communicated by M. Bernast of the Toulon Hospital to M. Begin. "A young soldier thought he felt, while eating soup, that he had swallowed a sharp bone, or a pin; consequent to which he experienced a pungent, lancinating, and occasionally insupportable pain. On entering the hospital, he was treated with antiphlogistics, but without success; the pain increased, and kept the unfortunate patient in restless misery. Nausea at length supervened, and he threw up some ounces of blood. Eventually he was seized with convulsions, and he died on the eighth



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day. On opening the body, a large quantity of blood was found in the chest, especially in the right side. The heart and aorta were sound; but on turning aside the pulmonary artery, there was found in front of the œsophagus a flattened, sharp-pointed bone, indented on one of its edges, and resembling one of the bones of the nose. This had produced an opening in the œsophagus, and a corresponding, though very minute one, in the pulmonary artery, at the spot where this vessel divides in order to be distributed to the lungs. The point of the bone was seen in actual contact with the lesion.”—*From the London Med. Gazette*, 11th May 1833, p. 175.

The right subclavian has also been wounded in one case, as related by Mr Kirby in the *Dublin Hospital Reports*, vol. ii.—In this case the right subclavian rose from the left side of the arch of the aorta and passed to the right behind the œsophagus. It is possible that many other cases may be on record, but I have not happened to meet with them.

I have said, that even had the foreign body in this case passed into the stomach, death might, and in all probability would, have been the consequence.—I might refer to many instances confirmative of this, in which the patients have perished from hemorrhage, or from obstruction or perforation of the intestines, but I do not consider it necessary to allude further to these at present.

In the accompanying plate, *a* indicates the situation of the perforation; *b* par vagum; *c* arteria innominata; *e* left carotid; *g* left subclavian; *m* a representation on a somewhat diminished scale of the false teeth.

